

## The Synonymy of the Viviparous Polychaete *Neanthes lighti* Hartman (1938) with *Nereis limnicola* Johnson (1903)

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*Nereis limnicola* was described by Johnson (1903) from the fresh-water Lake Merced in San Francisco, California. Since that time no reports of its occurrence have been published. Hartman (1938) noted that the boundaries and bed of the lake have been "altered by dredging and roadbuilding operations, and that what was once the type locality of *Nereis limnicola* now lies many feet below a road bed." In 1938 Hartman described *Neanthes lighti* from small estuaries on the coast of Marin and Sonoma counties to the north of San Francisco, and from pools described as fresh along the Russian River. In this paper Hartman mentions *N. limnicola*, but does not discuss the possibility of the two forms being synonymous. Later she has stated (Light *et al.*, 1954: 88) that *N. lighti* "may prove to be *Nereis limnicola* . . . ." In 1941, *N. lighti* was found to be viviparous by Dr. Marian Pettibone (reported by Hartman, 1944: 252), and an account of its embryology has been given by Smith (1950). Since viviparity and the ability to live in fresh water are rare among polychaetes, and since *N. lighti* seems to offer excellent experimental material, it is important that its identity be clearly established.

In recent years, reports of the existence of fresh-water nereids in Lake Merced have reached us, and search revealed them. A viviparous nereid answering the descriptions of *N. limnicola* and *N. lighti* has been found in abundance in a sandy beach on the northern shore of the northern part of what was originally the single lake. The type locality

described by Johnson ("the outlet of a 'slough' on the eastern shore of the southern arm of the lake") has indeed been filled for a roadbed, as Hartman stated, and yielded no specimens, although further search at lower water levels may reveal them; the present substrate is not especially favorable.

The finding of this material makes possible a comparison of *N. limnicola* and *N. lighti*. Johnson's description (1903) fits both species well, except that he did not notice viviparity in *N. limnicola*. Hartman's description (1938) also fits both, except that she did not observe in *N. lighti* a feature remarked upon by Johnson (1903: 210), namely, the presence in posterior neuropodia of a "stout, falcate type of setae . . . in which the appendage is firmly anchylosed to the shaft, the whole forming one continuous piece." As for the first discrepancy, it is clear that the Lake Merced population is viviparous, precisely in the fashion described in the Salinas River population of *N. lighti* by Smith (1950), and subsequently observed in populations from other localities along the coast as far north as the Canadian border. As for the second discrepancy, in 1951 the writer examined, in the U. S. National Museum, two specimens of *N. limnicola*, Cat. no. 5166, collected in Lake Merced on Oct. 29, 1895, by H. P. Johnson, and labeled as "type specimens." At that time I also inspected the type lot of *Neanthes lighti* Hartman, USNM Cat. no. 20537. The fused setae as described by Johnson are present in both groups of specimens, as they are in all *N. lighti* of the writer's collections, and the parapodia of both lots answer Johnson's de-

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scription; there is not the marked reduction of the median lobe in posterior parapodia mentioned by Hartman. Hence there is no reason to doubt that the two are identical, and that the viviparous nereid commonly called *Neanthes lighti* should be known as a synonym of *Nereis limnicola* Johnson (1903).

Since the viviparity of *N. limnicola* is the consequence of hermaphroditism making possible internal self-fertilization (Smith, 1950), *N. limnicola* must be regarded as an entity reproductively isolated from certain nonviviparous but morphologically very similar species. A more extended discussion of the implications of this contention is to appear elsewhere (Smith, 1958).

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